(1) Is performed on a pipeline facility;
(2) Is an operations or maintenance task;
(3) Is performed as a requirement of this part; and
(4) Affects the operation or integrity of the pipeline.

§ 192.803 Definitions.

Abnormal operating condition means a condition identified by the operator that may indicate a malfunction of a component or deviation from normal operations that may:
(a) Indicate a condition exceeding design limits; or
(b) Result in a hazard(s) to persons, property, or the environment.
Evaluation means a process, established and documented by the operator, to determine an individual's ability to perform a covered task by any of the following:
(a) Written examination;
(b) Oral examination;
(c) Work performance history review;
(d) Observation during:
(1) Performance on the job,
(2) On the job training, or
(3) Simulations;
(e) Other forms of assessment.
Qualified means that an individual has been evaluated and can:
(a) Perform assigned covered tasks; and
(b) Recognize and react to abnormal operating conditions.

[Amdt. 192–86, 64 FR 46865, Aug. 27, 1999, as amended by Amdt. 192–90, 66 FR 43523, Aug. 20, 2001]

§ 192.805 Qualification program.

Each operator shall have and follow a written qualification program. The program shall include provisions to:
(a) Identify covered tasks;
(b) Ensure through evaluation that individuals performing covered tasks are qualified;
(c) Allow individuals that are not qualified pursuant to this subpart to perform a covered task if directed and observed by an individual that is qualified;
(d) Evaluate an individual if the operator has reason to believe that the individual's performance of a covered task contributed to an incident as defined in Part 191;
(e) Evaluate an individual if the operator has reason to believe that the individual is no longer qualified to perform a covered task;
(f) Communicate changes that affect covered tasks to individuals performing those covered tasks; and
(g) Identify those covered tasks and the intervals at which evaluation of the individual's qualifications is needed.

§ 192.807 Recordkeeping.

Each operator shall maintain records that demonstrate compliance with this subpart.
(a) Qualification records shall include:
(1) Identification of qualified individual(s);
(2) Identification of the covered tasks the individual is qualified to perform;
(3) Date(s) of current qualification; and
(4) Qualification method(s).
(b) Records supporting an individual's current qualification shall be maintained while the individual is performing the covered task. Records of prior qualification and records of individuals no longer performing covered tasks shall be retained for a period of five years.

§ 192.809 General.

(a) Operators must have a written qualification program by April 27, 2001.
(b) Operators must complete the qualification of individuals performing covered tasks by October 28, 2002.
(c) Work performance history review may be used as a sole evaluation method for individuals who were performing a covered task prior to October 26, 1999.
(d) After October 28, 2002, work performance history may not be used as a sole evaluation method.

[Amdt. 192–86, 64 FR 46865, Aug. 27, 1999, as amended by Amdt. 192–90, 66 FR 43524, Aug. 20, 2001]

APPENDIX A TO PART 192—INCORPORATED BY REFERENCE

I. List of Organizations and Addresses

A. American Gas Association (AGA), 1515 Wilson Boulevard, Arlington, VA 22209.
B. American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036.

C. American Petroleum Institute (API), 1220 L Street, NW., Washington, DC 20005.

D. The American Society of Mechanical Engineers (ASME), United Engineering Center, 345 East 47th Street, New York, NY 10017.

E. American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428.

F. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS), 127 Park Street, NW., Vienna, VA 22180.

G. National Fire Protection Association (NFPA), 1 Batterymarch Park, P.O. 9101, Quincy, MA 02269–9101.

II. Documents Incorporated by Reference (Numbers in Parentheses Indicate Applicable Editions)

A. American Gas Association (AGA):

(1). AGA Pipeline Research Committee, Project PR–3–805, ''A Modified Criterion for Evaluating the Remaining Strength of Corroded Pipe'' (December 22, 1989).

B. American Petroleum Institute (API):

(1) API Specification 5L ''Specification for Line Pipe (41st edition, 1995).

(2). API Recommended Practice 5L1 ''Recommended Practice for Railroad Transportation of Line Pipe'' (4th edition, 1990).

(3) API Specification 6D ''Specification for Pipeline Valves (Gate, Plug, Ball, and Check Valves)'' (21st edition, 1994).

(4) API Standard 1104 ''Welding of Pipelines and Related Facilities'' (18th edition, 1994).

C. American Society for Testing and Materials (ASTM):

(1) ASTM Designation: A 53 ''Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless'' (A53–96).

(2) ASTM Designation A 106 ''Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service'' (A106–95).

(3) ASTM Designation: A 333/A 333M ''Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service'' (A 333/A 333M–94).

(4) ASTM Designation: A 372/A 372M ''Standard Specification for Carbon and Alloy Steel Forgings for Thin-Walled Pressure Vessels'' (A 372/A 372M–95).

(5) ASTM Designation: A 381 ''Standard Specification for Metal-Arc-Welded Steel Pipe for Use With High-Pressure Transmission Systems (A 381–93).

(6) ASTM Designation: A 671 ''Standard Specification for Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperatures'' (A 671–94).

(7) ASTM Designation: A 672 ''Standard Specification for Electric-Fusion-Welded Steel Pipe for High-Pressure Service at Moderate Temperatures'' (A 672–94).

(8) ASTM Designation A 691 ''Standard Specification for Carbon and Alloy Steel Pipe, Electric-Fusion-Welded for High- Pressure Service at High Temperatures'' (A 691–93).

(9) ASTM Designation D638 ''Standard Test Method for Tensile Properties of Plastics'' (D638–96).

(10) ASTM Designation D2513 ''Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings'' (D 2513–87 edition for §192.63(a)(1), otherwise D 2513–96a).

(11) ASTM Designation D 2517 ''Standard Specification for Reinforced Epoxy Resin Gas Pressure Pipe and Fittings'' (D 2517–94).

(12) ASTM Designation: F1055 ''Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing'' (F1055–95).

D. The American Society of Mechanical Engineers (ASME):

(1) ASME/ANSI B16.1 ''Cast Iron Pipe Flanges and Flanged Fittings'' (1989).

(2) ASME/ANSI B16.5 ''Pipe Flanges and Flanged Fittings'' (1988 with October 1988 Errata and ASME/ANSI B16.5a–1992 Addenda).

(3) ASME/ANSI B31G ''Manual for Determining the Remaining Strength of Corroded Pipelines'' (1991).

(4) ASME/ANSI B31.8 ''Gas Transmission and Distribution Piping Systems'' (1995).

(5) ASME Boiler and Pressure Vessel Code, Section I ''Power Boilers'' (1995 edition with 1995 Addenda).

(6) ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 ''Pressure Vessels'' (1995 edition with 1995 Addenda).

(7) ASME Boiler and Pressure Vessel Code, Section VIII, Division 2 ''Pressure Vessels: Alternative Rules'' (1995 edition with 1995 Addenda).

(8) ASME Boiler and Pressure Vessel Code, Section IX ''Welding and Brazing Qualifications'' (1995 edition with 1995 Addenda).

E. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS):

1. MSS SP44–96 ''Steel Pipe Line Flanges'' (includes 1996 errata) (1996).

2. [Reserved]

F. National Fire Protection Association (NFPA):

(1) NFPA 30 ''Flammable and Combustible Liquids Code'' (1996).

(2) ANSI/NFPA 58 ''Standard for the Storage and Handling of Liquefied Petroleum Gases'' (1995).

(3) ANSI/NFPA 59 ''Standard for the Storage and Handling of Liquefied Petroleum Gases at Utility Gas Plants'' (1995).

(4) ANSI/NFPA 70 ''National Electrical Code'' (1996).

[58 FR 14521, Mar. 18, 1993, as amended by Amdt. 192–68, 58 FR 45268–45269, Aug. 27, 1993; Amdt. 192–76, 61 FR 26123, May 24, 1996; Amdt. 192–78, 61 FR 28786, June 6, 1996; 61 FR 41020, Aug. 7, 1996; Amdt 192–83, 63 FR 7723, Feb. 17, 1998; Amdt. 192–84, 63 FR 38758, July 20, 1998]

APPENDIX B TO PART 192—QUALIFICATION OF PIPE

I. *Listed Pipe Specifications (Numbers in Parentheses Indicate Applicable Editions)*

API 5L—Steel pipe (1995).
ASTM A 53—Steel pipe (1995a).
ASTM A 106—Steel pipe (1994a).
ASTM A 333/A 333M—Steel pipe (1994).
ASTM A 381—Steel pipe (1993).
ASTM A 671—Steel pipe (1994).
ASTM A 672—Steel pipe (1994).
ASTM A 691—Steel pipe (1993).
ASTM D 2513—Thermoplastic pipe and tubing (1995c).
ASTM D 2517—Thermosetting plastic pipe and tubing (1994).

II. *Steel pipe of unknown or unlisted specification.*

A. *Bending Properties.* For pipe 2 inches (51 millimeters) or less in diameter, a length of pipe must be cold bent through at least 90 degrees around a cylindrical mandrel that has a diameter 12 times the diameter of the pipe, without developing cracks at any portion and without opening the longitudinal weld.

For pipe more than 2 inches (51 millimeters) in diameter, the pipe must meet the requirements of the flattening tests set forth in ASTM A53, except that the number of tests must be at least equal to the minimum required in paragraph II–D of this appendix to determine yield strength.

B. *Weldability*. A girth weld must be made in the pipe by a welder who is qualified under subpart E of this part. The weld must be made under the most severe conditions under which welding will be allowed in the field and by means of the same procedure that will be used in the field. On pipe more than 4 inches (102 millimeters) in diameter, at least one test weld must be made for each 100 lengths of pipe. On pipe 4 inches (102 millimeters) or less in diameter, at least one test weld must be made for each 400 lengths of pipe. The weld must be tested in accordance with API Standard 1104. If the requirements of API Standard 1104 cannot be met, weldability may be established by making chemical tests for carbon and manganese, and proceeding in accordance with section IX of the ASME Boiler and Pressure Vessel Code. The same number of chemical tests must be made as are required for testing a girth weld.

C. *Inspection.* The pipe must be clean enough to permit adequate inspection. It must be visually inspected to ensure that it is reasonably round and straight and there are no defects which might impair the strength or tightness of the pipe.

D. *Tensile Properties.* If the tensile properties of the pipe are not known, the minimum yield strength may be taken as 24,000 p.s.i. (165 MPa) or less, or the tensile properties may be established by performing tensile tests as set forth in API Specification 5L. All test specimens shall be selected at random and the following number of tests must be performed:

NUMBER OF TENSILE TESTS—ALL SIZES

10 lengths or less	1 set of tests for each length.
11 to 100 lengths	1 set of tests for each 5 lengths, but not less than 10 tests.
Over 100 lengths	1 set of tests for each 10 lengths, but not less than 20 tests.

If the yield-tensile ratio, based on the properties determined by those tests, exceeds 0.85, the pipe may be used only as provided in §192.55(c).

III. *Steel pipe manufactured before November 12, 1970, to earlier editions of listed specifications.* Steel pipe manufactured before November 12, 1970, in accordance with a specification of which a later edition is listed in section I of this appendix, is qualified for use under this part if the following requirements are met:

A. *Inspection.* The pipe must be clean enough to permit adequate inspection. It must be visually inspected to ensure that it is reasonably round and straight and that there are no defects which might impair the strength or tightness of the pipe.

B. *Similarity of specification requirements.* The edition of the listed specification under which the pipe was manufactured must have substantially the same requirements with respect to the following properties as a later edition of that specification listed in section I of this appendix:

(1) Physical (mechanical) properties of pipe, including yield and tensile strength, elongation, and yield to tensile ratio, and testing requirements to verify those properties.

(2) Chemical properties of pipe and testing requirements to verify those properties.

C. *Inspection or test of welded pipe.* On pipe with welded seams, one of the following requirements must be met:

(1) The edition of the listed specification to which the pipe was manufactured must have substantially the same requirements with respect to nondestructive inspection of welded seams and the standards for acceptance or

rejection and repair as a later edition of the specification listed in section I of this appendix.

(2) The pipe must be tested in accordance with subpart J of this part to at least 1.25 times the maximum allowable operating pressure if it is to be installed in a class 1 location and to at least 1.5 times the maximum allowable operating pressure if it is to be installed in a class 2, 3, or 4 location. Notwithstanding any shorter time period permitted under subpart J of this part, the test pressure must be maintained for at least 8 hours.

[35 FR 13257, Aug. 19, 1970]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting appendix B of part 192, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

APPENDIX C TO PART 192—QUALIFICATION OF WELDERS FOR LOW STRESS LEVEL PIPE

I. *Basic test.* The test is made on pipe 12 inches (305 millimeters) or less in diameter. The test weld must be made with the pipe in a horizontal fixed position so that the test weld includes at least one section of overhead position welding. The beveling, root opening, and other details must conform to the specifications of the procedure under which the welder is being qualified. Upon completion, the test weld is cut into four coupons and subjected to a root bend test. If, as a result of this test, two or more of the four coupons develop a crack in the weld material, or between the weld material and base metal, that is more than ⅛-inch (3.2 millimeters) long in any direction, the weld is unacceptable. Cracks that occur on the corner of the specimen during testing are not considered.

II. *Additional tests for welders of service line connections to mains.* A service line connection fitting is welded to a pipe section with the same diameter as a typical main. The weld is made in the same position as it is made in the field. The weld is unacceptable if it shows a serious undercutting or if it has rolled edges. The weld is tested by attempting to break the fitting off the run pipe. The weld is unacceptable if it breaks and shows incomplete fusion, overlap, or poor penetration at the junction of the fitting and run pipe.

III. *Periodic tests for welders of small service lines.* Two samples of the welder's work, each about 8 inches (203 millimeters) long with the weld located approximately in the center, are cut from steel service line and tested as follows:

(1) One sample is centered in a guided bend testing machine and bent to the contour of the die for a distance of 2 inches (51 millimeters) on each side of the weld. If the sample shows any breaks or cracks after removal from the bending machine, it is unacceptable.

(2) The ends of the second sample are flattened and the entire joint subjected to a tensile strength test. If failure occurs adjacent to or in the weld metal, the weld is unacceptable. If a tensile strength testing machine is not available, this sample must also pass the bending test prescribed in subparagraph (1) of this paragraph.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192–85, 63 FR 37504, July 13, 1998]

APPENDIX D TO PART 192—CRITERIA FOR CATHODIC PROTECTION AND DETERMINATION OF MEASUREMENTS

I. *Criteria for cathodic protection—* A. *Steel, cast iron, and ductile iron structures.* (1) A negative (cathodic) voltage of at least 0.85 volt, with reference to a saturated copper-copper sulfate half cell. Determination of this voltage must be made with the protective current applied, and in accordance with sections II and IV of this appendix.

(2) A negative (cathodic) voltage shift of at least 300 millivolts. Determination of this voltage shift must be made with the protective current applied, and in accordance with sections II and IV of this appendix. This criterion of voltage shift applies to structures not in contact with metals of different anodic potentials.

(3) A minimum negative (cathodic) polarization voltage shift of 100 millivolts. This polarization voltage shift must be determined in accordance with sections III and IV of this appendix.

(4) A voltage at least as negative (cathodic) as that originally established at the beginning of the Tafel segment of the E-log-I curve. This voltage must be measured in accordance with section IV of this appendix.

(5) A net protective current from the electrolyte into the structure surface as measured by an earth current technique applied at predetermined current discharge (anodic) points of the structure.

B. *Aluminum structures.* (1) Except as provided in paragraphs (3) and (4) of this paragraph, a minimum negative (cathodic) voltage shift of 150 millivolts, produced by the application of protective current. The voltage shift must be determined in accordance with sections II and IV of this appendix.

(2) Except as provided in paragraphs (3) and (4) of this paragraph, a minimum negative (cathodic) polarization voltage shift of 100 millivolts. This polarization voltage shift must be determined in accordance with sections III and IV of this appendix.

(3) Notwithstanding the alternative minimum criteria in paragraphs (1) and (2) of this paragraph, aluminum, if cathodically

protected at voltages in excess of 1.20 volts as measured with reference to a copper-copper sulfate half cell, in accordance with section IV of this appendix, and compensated for the voltage (IR) drops other than those across the structure-electrolyte boundary may suffer corrosion resulting from the build-up of alkali on the metal surface. A voltage in excess of 1.20 volts may not be used unless previous test results indicate no appreciable corrosion will occur in the particular environment.

(4) Since aluminum may suffer from corrosion under high pH conditions, and since application of cathodic protection tends to increase the pH at the metal surface, careful investigation or testing must be made before applying cathodic protection to stop pitting attack on aluminum structures in environments with a natural pH in excess of 8.

C. *Copper structures.* A minimum negative (cathodic) polarization voltage shift of 100 millivolts. This polarization voltage shift must be determined in accordance with sections III and IV of this appendix.

D. *Metals of different anodic potentials.* A negative (cathodic) voltage, measured in accordance with section IV of this appendix, equal to that required for the most anodic metal in the system must be maintained. If amphoteric structures are involved that could be damaged by high alkalinity covered by paragraphs (3) and (4) of paragraph B of this section, they must be electrically isolated with insulating flanges, or the equivalent.

II. *Interpretation of voltage measurement.* Voltage (IR) drops other than those across the structure-electrolyte boundary must be considered for valid interpretation of the voltage measurement in paragraphs A(1) and (2) and paragraph B(1) of section I of this appendix.

III. *Determination of polarization voltage shift.* The polarization voltage shift must be determined by interrupting the protective current and measuring the polarization decay. When the current is initially interrupted, an immediate voltage shift occurs. The voltage reading after the immediate shift must be used as the base reading from which to measure polarization decay in paragraphs A(3), B(2), and C of section I of this appendix.

IV. *Reference half cells.* A. Except as provided in paragraphs B and C of this section, negative (cathodic) voltage must be measured between the structure surface and a saturated copper-copper sulfate half cell contacting the electrolyte.

B. Other standard reference half cells may be substituted for the saturated cooper-copper sulfate half cell. Two commonly used reference half cells are listed below along with their voltage equivalent to −0.85 volt as referred to a saturated copper-copper sulfate half cell:

(1) Saturated KCl calomel half cell: −0.78 volt.

(2) Silver-silver chloride half cell used in sea water: −0.80 volt.

C. In addition to the standard reference half cells, an alternate metallic material or structure may be used in place of the saturated copper-copper sulfate half cell if its potential stability is assured and if its voltage equivalent referred to a saturated copper-copper sulfate half cell is established.

[Amdt. 192–4, 36 FR 12305, June 30, 1971]

PART 193—LIQUEFIED NATURAL GAS FACILITIES: FEDERAL SAFETY STANDARDS

Subpart A—General

Subpart B—Siting Requirements

Subpart C—Design